

Modeling Discussion: Major points for the Working Group

- Modeling of ecosystem effects has been incremental and adaptive, many model types are derivative of single species population dynamics with elaborations for ecosystem issues of increasing complexity. Need to explore sets of models – can use multiple models looking at differing mechanisms & scenarios. Structured systems to evaluate multiple hypotheses explaining outcomes requires different models, in a formal adaptive management approach
- Management strategy analyses imbed population and ecosystem dynamics within the management system. What are appropriate inference procedures for the selection of likely model structures? Information criteria for “goodness of fit”. Bayesian model weights, evidence ratios. Qualitative error checking on structure of model. Within models such as Ecosim have uncertainty measures.

Modeling Discussion: (Continued)

Major points for the Working Group

- Benefits of MSE are in the modeling process (collaboration), assess tradeoffs, decision Makers have to be transparent regarding “rules”. MSE provides results that can be quantitative, directional, semi-quantitative or qualitative. Selection of indicators should be In the context of what people are interested in. Objectives turned into quantitative performance indicators. Argues that the modeling process should be with stakeholders and Iterative/adaptive. Uncertainty increases up the quantitative scale (direction, levels, absolutes). Understanding behavioral responses of people to management is an important aspect of MSE (implementation error). Who is allowed to be a “stakeholder” in the MSE process? Who determines this? Specifying objectives & performance measures is major part of process. Random Utility models. Social science models.

Modeling Discussion: (continued)

Major points for the Working Group

- Model selection process-appropriateness table.
- Optimality vs. Satisfying, tactical vs. strategic levels. Interactions with existing laws – MSY vs. optimality... Minimum sustainable whinge? Management strategies robust to different strategies for optimality. Transition costs from tactical approaches to strategic ecosystem approaches. At what point do management decision tradeoffs occur (before modeling quantitative outcomes?) Feedback “open-loop” or “closed loop”?
- Consider habitat effects in model selection. Modeling to increase knowledge with life history information as opposed to using minimum (engineering) approaches that describe history. Ecology key to informing models, merging ecosystems modeling and EAF modeling. Relevant models from non-traditional disciplines? Ensemble analysis for combining multiple models. Role of optimization. Finance literature, Alternative ways of specifying uncertainties, Fuzzy logic, network analyses. Non-parametric models